

1 Complete :

[a] The product of two negative integers is

[b] $17 \times \dots = (-5) \times 17$ [c] $-|-2| = \dots$ [d] $\mathbb{Z}^+ \cup \{0\} = \dots$ [e] $5 \times (-2) = \dots$

5

2 Find the result of each of the following :

[a] $9 \times (-3)$ [b] $(-36) \div (-4)$ [c] $[8 + (-5)] \times 6$ [d] $6 \times [-2 + (-7)]$

4

3 [a] Use the properties of multiplication of integers to find each of the following :

(1) $50 \times 14 \times 2$ (2) $8 \times (-9) \times 125 \times 3$

[b] Use the distributive property to find the result of each of the following :

(1) $3 \times (-2) + 3 \times 5$ (2) $112 \times 98 + 112 \times (-97)$

6

4 Choose the correct answer :

[a] $(|-9| + 3) \div 2$ \mathbb{Z} (\in or \notin or \subset or $\not\subset$)[b] The set of non-negative integers is (\mathbb{C} or \mathbb{Z} or $\{0\}$ or \mathbb{N})[c] $(-5) \times |-4| = \dots$

(20 or -20 or 9 or -9)

[d] $6 - (-6) = \dots$

(0 or 6 or 12 or 60)

4

5 [a] Write using the listing method each of the following sets :

(1) The set of integers greater than -3

(2) The set of integers included between -4 and 2

[b] Use the properties of addition in \mathbb{Z} to find :(1) $5 + 4 + (-5)$ (2) $45 + 36 + 55 + 64$

6

1 Choose the correct answer :

[a] $(-7)^2 \dots\dots\dots \mathbb{N}$ (\in or \notin or \subset or $\not\subset$)

[b] The additive inverse of $(-3)^2$ is $\dots\dots\dots$ (9 or 3 or -3 or -9)

[c] $(-9)^2 = \dots\dots\dots$ (-81 or -18 or 81 or 18)

[d] If $|-4| = x$, then $x = \dots\dots\dots$ (4 or -4 or 16 or -18)

[e] If $-7 + n = -7$, then $n = \dots\dots\dots$ (1 or 7 or -7 or 0)

2 Find the value of each of the following :

[a] $5^4 \times 5^3 = \dots\dots\dots$

[b] $9^9 \div 9^7 = \dots\dots\dots$

[c] $8^3 \times 8 \times 8^2 = \dots\dots\dots$

[d] $\frac{(-7)^8}{(-7)^6} = \dots\dots\dots$

3 Simplify each of the following :

[a] $\frac{3^5 \times 3^4}{3^7}$

[b] $\frac{6^3 \times 6^5}{6^7 \times 6}$

4 Put the suitable relation "> , = or <" :

[a] $-12 \dots\dots\dots (-6)^2$

[b] $(-1)^2 \dots\dots\dots (-1)^3$

[c] $\frac{9^3}{9^3} \dots\dots\dots (-10)^{\text{zero}}$

[d] $|-6| + (-5)^2 \dots\dots\dots 2^5$

5 Arrange in a descending order :

$(-2)^5, (-4)^0, (-3)^4, (-1)^{15}$ and 3^2

1 Find the solution set of each of the following equations :

[a] $x + 5 = 12$, if the substitution set is : $\{3, 5, 8, 7\}$

[b] $3x - 4 = 8$, if the substitution set is : $\{3, 5, 6\}$

[c] $2x + 1 = x - 3$, if the substitution set is : $\{2, 4, -1, -4\}$

[d] $3(x - 2) = -6$, if the substitution set is : $\{-1, 0, 1\}$

2 Find the solution set of each of the following inequalities :

[a] $3x + 5 > 2$, if the substitution set is : $\{-2, -1, 0, 1\}$

[b] $3x - 1 > -2$, if the substitution set is : $\{-2, -1, 0, 1, 2\}$

[c] $5x - 1 > 4$, if the substitution set is : $\{2, 3, 4, 5, 6\}$

[d] $x + 3 < 5$, if the substitution set is : $\{0, 1, 2, 3, 4\}$

3 Considering the set of substitution is $A = \{0, 1, 2, 3\}$

Find the solution set of each of the following :

[a] $2x - 7 = -1$

[b] $x + 4 > 5$

4 Choose the correct answer :

[a] The additive inverse of -4 is (0 or 4 or -4 or 8)

[b] $|-9| + 3 = \dots\dots\dots$ (-6 or -12 or 6 or 12)

[c] The equation : $2^6 + x^5 = 100$ is of the degree.

(11^{th} or 5^{th} or 6^{th} or 1^{st})

[d] $\mathbb{Z}^+ \cap \mathbb{Z}^- = \dots\dots\dots$ (\mathbb{N} or \mathbb{C} or \emptyset or \mathbb{Z})

[e] The multiplicative neutral element in \mathbb{Z} is

(1 or 0 or -1 or 2)

5 **[a]** Simplify : $\frac{5^4 \times 3^6}{3^4 \times 5^2}$

[b] Determine the degree of each of the following equations :

(1) $4b - 7 = 8$

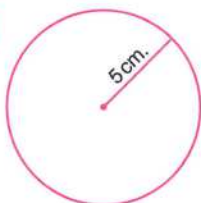
(2) $x^3 - 3x^2 = 4$

(3) $x - 2y = 9$

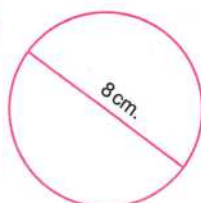
(4) $x^4 + 3x^5 = 19$

1 Find the area of each of the following circles (Consider $\pi = 3.14$) :

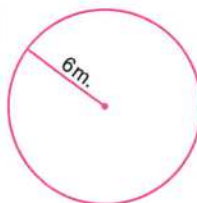
[a]



[b]



[c]

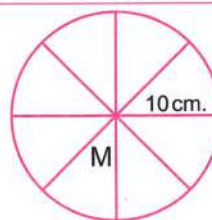


3

2 In the opposite figure :

A circle M of radius 10 cm. is divided into 8 equal circular sectors.

Calculate the area of one sector. (Consider $\pi = 3.14$)



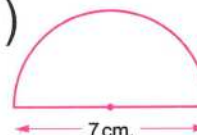
5

3 [a] If the length of the diameter of a circle is 14 cm. Calculate :

(1) The circumference of the circle.

(2) The surface area of the circle. (Consider $\pi = \frac{22}{7}$)

[b] Find the area of the opposite figure
(Consider $\pi = \frac{22}{7}$)



6

4 Choose the correct answer :

[a] The surface area of the circle = $\pi \times \dots\dots\dots$

(2 or 2 r or r^2 or r^3)

[b] The image of the point $(-3, 5)$ by translation $(1, -2)$ is $\dots\dots\dots$

($(-4, 3)$ or $(-2, 3)$ or $(-2, -3)$ or $(2, 3)$)

[c] A circle , its diameter length is 20 cm. , then its area = $\dots\dots\dots$ cm.

($\pi = 3.14$) $\dots\dots\dots$ (314 or 1256 or 31.4 or 62.8)

[d] If M $(-2, 1)$, H $(3, 1)$, then MH = $\dots\dots\dots$ units.

(1 or 3 or 5 or 6)

[e] A circle its radius length is 4 cm. , then its area = $\dots\dots\dots \pi \text{ cm}^2$

(8 or 16 or 64 or 140)

5 [a] Determine in the coordinates plane the image of the line segment \overline{AB} where A $(2, 3)$, B $(-2, 0)$ by translation $(X + 3, y - 2)$

[b] A circle , its circumference is 88 cm.

Calculate its radius length and its surface area. (Consider $\pi = \frac{22}{7}$)

6

1 [a] A cube-shaped box is of edge length 5 cm. Find :

- (1) Its lateral area. (2) Its total area.

4

[b] A cuboid is with length 7 cm. , width 5 cm. and height 8 cm. Find :

- (1) Its lateral area. (2) Its total area.

2 [a] If the sum of the edges of a cube is 108 cm.

Find its lateral and total area.

6

[b] A cuboid is with square base of side length 3 cm. and height 6 cm.

Find its lateral area and total area.

3 [a] The perimeter of the base of a cuboid is 20 cm. and its height is 6 cm.
Calculate the lateral area of the cuboid.

6

[b] If the lateral area of a cube is 100 cm^2 Find its total area.

4 Choose the correct answer :

5

[a] A cube , the perimeter of its base is 36 cm. , then its
lateral area = cm^2 (9 or 324 or 36 or 986)

[b] The image of the point (..... ,) by translation $(X - 3, y + 4)$
is $(-5, -3)$ ($(-8, 1)$ or $(-2, -7)$ or $(-2, 7)$ or $(2, 7)$)

[c] The lateral area of a cuboid of length 3 cm. , width 2 cm. and height
4 cm. = cm^2 (20 or 24 or 40 or 52)

[d] The total area of a cube = area of one face \times
(4 or 5 or 6 or 8)

[e] A circle , its radius length is 7 cm. , then its area = cm^2 ($\pi = \frac{22}{7}$)
(44 or 154 or 218 or 449)

5 [a] A cuboid whose total area = 132 cm^2 and its lateral area = 112 cm^2
Find the area of its base.

4

[b] A cuboid whose lateral area 140 cm^2 and the dimensions of its base
are 6 cm. and 4 cm. Find its height.

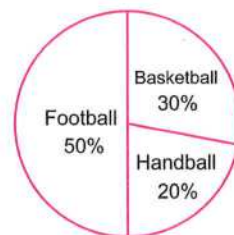
APRIL TESTS

Model 1

Answer the following questions :

1 Choose the correct answer :

- (1) The measure of the angle of the sector which represents $\frac{1}{4}$ the area of the circle is (30° or 45° or 90° or 180°)
- (2) The number which satisfies the inequality : $x < -1$ is (-2 or 2 or 1 or 0)
- (3) If the set of substitution is $\{1, 2, 3, 4\}$, then the set of solution of the equation : $x + 6 = 10$ is ($\{1\}$ or $\{2\}$ or $\{3\}$ or $\{4\}$)
- (4) The opposite figure represents the percentages of the distribution of the sport activities for the pupils in a class of a school, their number is 40 pupils, then the number of pupils who participated in basketball = pupils.



(5 or 8 or 12 or 20)

2 Complete each of the following :

- (1) If $x + 3 = |-6|$, then $x =$
- (2) The measure of the central angle which represents $\frac{1}{9}$ of the circle is°
- (3) The greatest integer that satisfies the inequality : $x < 6$ is
- (4) If $(x + 1)$ is the additive inverse of (-3) , then $x =$

3 The following table shows the favorite sport in youth centre :

Sports	Volleybal	Football	Basketball	Handball
Percentage	10%	40%	20%	30%

Represent these data by the circular sectors.

.....

.....

.....

.....

Model 2

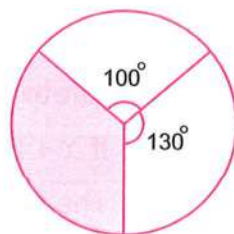
Answer the following questions :

1 Choose the correct answer :

- (1) The equation : $x + 2 = 10$ is of the degree.
(first **or** second **or** third **or** fourth)
- (2) If $3y = 9$, then $y + 5 =$ (8 **or** 11 **or** 14 **or** 32)
- (3) If 2 is the solution of the equation : $3x + 1 = a$, then $a =$
(5 **or** 6 **or** 7 **or** 8)
- (4) All the following numbers satisfy the inequality : $x > -3$ except
(-2 **or** -1 **or** -4 **or** 0)

2 Complete each of the following :

- (1) The solution set of the equation : $3x + 2 = -7$ in \mathbb{N} is
- (2) The measure of the angle for the circular sector of half of a circle is °
- (3) In the opposite figure :
The measure of the central angle of the shaded circular sector equals °
- (4) If one of the families spends its salary as the following
40% for food , 20% for house rent , 30% for expenses
, then they save the remainder and its percentage is %



3 Find the solution set of the equation : $2x - 3 = -9$ in \mathbb{Z} and in \mathbb{N}

.....

.....

.....

Model 3

Answer the following questions :

1 Choose the correct answer :

(1) If $x - 5 = 7$, $x \in \mathbb{Z}$, then $x = \dots\dots\dots$ (2 or 12 or -12 or 35)

(2) The sum of the measures of the accumulative angles at the centre of a circle is $\dots\dots\dots$ (70° or 90° or 180° or 360°)

(3) If $2x = 6$, then $5x = \dots\dots\dots$ (3 or 5 or 10 or 15)

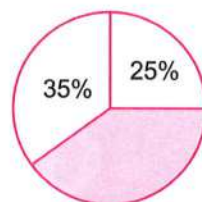
(4) The solution set of the equation : $5x = -10$ in \mathbb{N} is $\dots\dots\dots$
($\{-2\}$ or $\{2\}$ or $\{-5\}$ or \emptyset)

2 Complete each of the following :

(1) The inequality : $y^3 + 1 \leq 5$ is of the in $\dots\dots\dots$ degree.

(2) In the opposite figure :

The percentage of the shaded circular sector = $\dots\dots\dots$ %



(3) If $\frac{x}{5} = -2$, then $x = \dots\dots\dots$

(4) If $2x + 1 = |-5|$, then $x = \dots\dots\dots$

3 The following table shows the number of studying hours that Hamza has done in a week :

Subject	Arabic	Maths	Science	English	Social studies
Number of hours	8	10	7	6	5

Represent these data by a pie chart.

.....

Worksheet **7** On Lesson (4) – Unit (1)

Total mark

25

1 Choose the correct answer:

5

- a) $(-36) \div (-9) = \dots\dots\dots$ (-4 or 4 or 6 or -6)
- b) If $x = -4$, $y = -3$, then $x y = \dots\dots\dots$ (12 or -12 or 7 or -7)
- c) $|-72| \div 8 \dots\dots\dots |-60| \div (-12)$ ($>$ or $<$ or $=$ or otherwise)
- d) $\dots\dots\dots \times 6 = 8 \times -3$ (8 or 4 or -3 or -4)
- e) If $x = -2$, $y = -1$, then $4 x y = \dots\dots\dots$ (-8 or 8 or 4 or -4)

2 Complete each of the following:

5

- a) The product of a negative integer and a positive integer is $\dots\dots\dots$ integer.
- b) The multiplicative neutral element in \mathbb{Z} is $\dots\dots\dots$
- c) $[6 \times (-4)] \times 5 = \dots\dots\dots \times [(-4) \times 5]$
- d) Multiplying any integer by zero equals $\dots\dots\dots$
- e) If $x = -14$, $y = 7$, then $\frac{2y}{x} = \dots\dots\dots$

3 Use the distributive property to find:

5

- a) $(-10) \times 15 + 20 \times (-10) - 8 \times (-10)$
- b) $3 \times (-101) + 3$

4 Find the value of x in each of the following where $x \in \mathbb{Z}$:

5

- a) $(-64) \div x = -16$
- b) $6 \times |-7| = 6 \times (x + 1)$

5 If $a = 7$, $b = -12$ and $c = -3$, calculate the value of each of the following:

- a) $(a \times c) + b$ b) $(b \div c) \times a$ c) $a \times b \times c$

5

Worksheet 8 Till Lesson (4) – Unit (1)

Total mark

25

1 Choose the correct answer:

5

a) $-|9| + |-3| = \dots\dots\dots$

(-3 or -9 or -6 or 6)

b) $-8 \div (-4) = \dots\dots\dots$

(2 or 4 or -2 or zero)

c) The additive inverse of the number $|-3| = \dots\dots\dots$

(3 or -3 or 6 or zero)

d) $-7 \times -9 = \dots\dots\dots$

(63 or -2 or -72 or 72)

e) $7 \times (6 + (-3)) = \dots\dots\dots$

(-1 or 16 or 10 or 21)

2 Complete each of the following:

5

a) $\mathbb{Z} \cup \{0\} = \dots\dots\dots$

b) $|-36| \div |-4| = \dots\dots\dots$

c) If $x \times (-5) = 45$, then $x = \dots\dots\dots$

d) $(35 \div 5) \div (-7) = \dots\dots\dots$

e) $5 \times (-3 + 7) = \dots\dots\dots$

3 a) Find the numerical value of:

5

$(2x + y - Z)$ if $x = 3$, $y = -1$, $Z = -7$

b) Find the result of the following: $(5 + (-3)) \times -11$

4 Find the result of each of the following:

5

a) $420 \div (-15)$

b) $(-1300) \times 2$

c) $15 \times (-15)$

d) $112 + 75 + (-112)$

e) $(-144) \div 12$

5 Find the value of x in each of the following:

5

a) $x = (-2) \times 5$

b) $3 \times x = -24$

c) $(-48) \div x = (-4)$

d) $5 \times |-7| = 5 \times |x + 1|$

e) $-4x = 36$

Worksheet 9 On Lesson (5) – Unit (1)

Total mark

25

1 Choose the correct answer:

5

- a) $(-4)^3 \dots\dots\dots \mathbb{N}$ (\in or \notin or \subset or $\not\subset$)
- b) $(-3)^3 = \dots\dots\dots$ (9 or 12 or -27 or 27)
- c) $4^2 \div (-4)^2 = \dots\dots\dots$ (1 or -1 or 0 or 4)
- d) If $2^3 \div 2^b = 1$, then $b = \dots\dots\dots$ (2 or 3 or 1 or 0)
- e) The additive inverse of $(-2)^2$ is $\dots\dots\dots$ (-4 or 4 or 2 or -2)

2 Complete each of the following:

5

- a) $6 \times 6 \times 6 \times 6 = 6^{\dots\dots\dots}$
- b) 9 squared = $\dots\dots\dots$
- c) $(-6)^{\text{zero}} = \dots\dots\dots$
- d) $(-1)^{99} \times (-1)^{100} = \dots\dots\dots$
- e) $(-2)^2 \times (-7) = \dots\dots\dots$

3 Arrange the following in ascending order:

5

- a) $(-3)^3$, $(-3)^0$, (-3) , $(-1)^7$
- b) 10, $(-10)^2$, $(-10)^3$, $(-10)^0$, $(10)^3$

4 Find the value of each of the following:

5

- a) $\frac{(-3)^7 \times (-3)^2}{(-3)^4}$
- b) $\frac{(-2)^7 \times (-2)^5}{(-2)^{10}}$
- c) $\frac{7^4 \times (-7)^5}{(-7)^6}$
- d) $\frac{(-5)^2 \times 5^8}{(-5)^4 \times (-5)^3}$

5 Use the distributive property to find the value of:

5

- a) $(-16)^2 + (-16) \times 6$
- b) $(30)^2 + 30 \times 4 - 30 \times (-6)$

Worksheet **10** Till Lesson (5) – Unit (1)

Total mark

25

5

1 Complete each of the following:

a) $(-5)^2 + (-2)^3 = \dots\dots\dots$

b) $[(-2)^5 \times (-2)^4] \div (-2)^8 = \dots\dots\dots$

c) $(-6)^5 \div (-6)^3 = \dots\dots\dots$

d) $\mathbb{Z}^- \cup \mathbb{Z}^+ = \dots\dots\dots$

e) $\mathbb{Z} - \mathbb{N} = \dots\dots\dots$

2 Put the suitable sign ($<$, $=$ or $>$) in each of the following:

a) 4^2 16

b) $(-5)^2$ (-10)

c) $\frac{1}{3^5} \times 3^5$ $(75)^{\text{Zero}}$

d) $(9)^2$ 18

e) $2^{11} \div 2^9$ 2^2

3 a) Arrange the following descendingly:

10^5 , $(-1)^7$, 100^2 , $(-10)^3$ and 1 000 000

b) Find the value of:

1) $\frac{3^4 \times (-3)^5}{3^7}$

2) $\frac{(-8)^7 \times (-8)^3}{(-8)^9}$

4 a) Check the closure property in addition and subtraction on the set $x = \{-3, 7, 3, -1\}$.

b) The temperature on Tuesday in the morning in Cairo was 32°C , while at night it dropped to 18°C . Calculate the temperature decrease.

5 a) Simplify each of the following to the simplest form:

1) $\frac{x^9}{x^3 \times x^2}$, where $(x \neq 0)$

2) $\frac{a^{12}}{a^7 \times a^2}$, where $(a \neq 0)$

b) If $a = -2$, $b = -1$, find the value of:

1) $a^2 + b^2$

2) $(a + b)^3$

25

25

5

- a) The degree of the equation $x^3 + 2x^2 = -4$ is (1st or 2nd or 3rd or 4th)
- b) The solution set of the equation $2x - 3 = 1$ is if the substitution set is $\{0, 1, 2, 3\}$. ($\{0\}$ or $\{1\}$ or $\{2\}$ or $\{3\}$)
- c) The degree of the equation $x + 1 = 2$ is (1st or 2nd or 3rd or 4th)
- d) Which of the following represents an equation? ($x - 17$ or $22 - 7$ or $x > 13$ or $3x + 7 = 16$)

5

- a) If $x = 2$, $y = 3$, then the value of $2x y = \dots\dots\dots$
- b) If the substitution set is $\{0, 1, 2, 3, 4\}$, then the solution set of the inequality $x + 2 < 5$ is $\dots\dots\dots$
- c) The degree of the equation $2x^2 - x - 5 = 0$ is $\dots\dots\dots$
- d) The equation $x^3 - 5 = 11$ is of the $\dots\dots\dots$ degree.

5

- a) $2x + 1 = 5$
c) $2 + 3x = 7$

5

5

- the substitution set is $\{1, 2, 3, 4, 5, 6\}$.

Worksheet **14** On Lesson (1) – Unit (2)

Total mark

25

1 Choose the correct answer:

5

a) All the following numbers satisfy the inequality $x > -2$ except(zero **or** -2 **or** 3 **or** 4)b) The degree of the equation $3x^2 - 2 = 3$ is(1st **or** 2nd **or** 3rd **or** 4th)c) The number which satisfies the inequality $x > -2$ is(-1 **or** -2 **or** -3 **or** -4)d) The degree of the equation $7x^4 + 3x^2 - 1 = 0$ is(1st **or** 2nd **or** 3rd **or** 4th)**2 Complete each of the following:**

5

a) The equation is a mathematical sentence that includes relation between its two sides.

b) The solution set of $4x + 7 = 19$ is if the substitution set is $\{2, 3, 4, 5\}$.c) The equation $4x^2 + 3x^3 - 1 = 7$ is of the degree.d) The solution set of $2x - 1 = -1$ is if the substitution set is $\{0, 1, 2, 3\}$.**3 Given that substitution set $\{2, 4, 6, 8, 10, 12\}$:**

5

a) Find the solution set of the equation $8x + 8 = 72$ b) Find the solution set of the inequality $3x - 7 > 8$ **4 Express each of the following as an inequality:**

5

a) x is greater than or equal 5b) y is less than 7c) x is greater than 2 and less than or equal 8d) x is less than or equal 5 and greater than or equal -8 **5 Determine the degree of each of the following:**

5

a) $4x^4 + y + 7 = 3$

b) $3x^2 + 1 \leq 8$

c) $x^4 + 8y^3 = 5$

d) $5x + 4x^3 + 5 = 1$

Worksheet **23** On Lesson (3) – Unit (3)

Total mark

25

1 Choose the correct answer:

5

- a) The surface area of the circle = (πr **or** πr^2 **or** $2\pi r$ **or** $2\pi r^2$)
- b) A circle of diameter length 10 cm, its area = $\pi \text{ cm}^2$. (100 **or** 50 **or** 25 **or** 5)
- c) The circumference of a circle = $\pi \times$ (r **or** r^2 **or** $2r$ **or** 3.14)
- d) The area of the circle whose diameter length 2 cm = cm^2 . ($\pi = 3.14$)
(314 **or** 31.4 **or** 6.280 **or** 3.14)

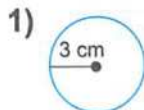
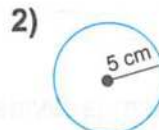
2 Complete each of the following:

5

- a) The area of a piece of wood in the shape of a circle of radius 7 cm is cm^2 .
- b) A circle its circumference is 88 cm, then its radius = cm^2 . ($\pi \approx \frac{22}{7}$)
- c) The circle whose diameter length is 14 cm, its area = cm^2 . ($\pi \approx \frac{22}{7}$)
- d) A circle whose radius is 28 m, then half of its surface area = m^2 ($\pi \approx \frac{22}{7}$)

3 a) Calculate the radius length of the circle whose area is 7546 cm^2 . ($\pi \approx \frac{22}{7}$)

5

b) Calculate the area of each of the following circles:Area = cm^2 .Area = cm^2 .**4 Find the area of the shaded part in each of the following figures:**

5

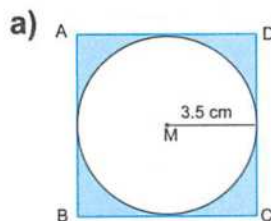


Figure (1)

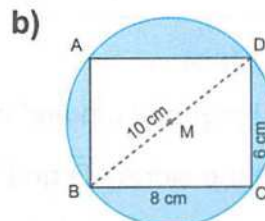
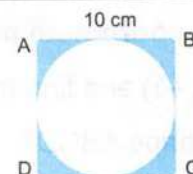


Figure (2)

5 In the opposite figure: if ABCD is a square whose length is10 cm, **calculate** the area of the shaded part. ($\pi \approx \frac{22}{7}$)

5


Worksheet 24 Till Lesson (3) – Unit (3)

Total mark

25

1 Choose the correct answer:

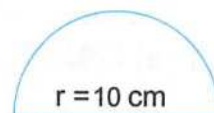
5

- a) A circle; its radius is 4 cm, then its area = πr^2 . (4 or 8 or 12 or 16)
- b) If the opposite figure is a quarter of a circle whose radius length is 2 cm,  then the perimeter of the shape = cm. (2π or 5π or $4\pi + 4$ or $\pi + 4$)
- c) The area of a sector which represents $\frac{1}{2}$ of the surface of a circle whose radius = 14 cm is cm^2 . (77 or 144 or 38.5 or 288)
- d) If A (3, -5) and B (3, 4), then the length of \overline{AB} = units. (8 or 9 or 100 or -9)

2 Complete each of the following:

5

- a) The image of the point (3, -6) by translation of a magnitude of 3 units in the positive direction of Y-axis is
- b) A circle with diameter length 20 cm, then its area =
- c) The image of the point (-3, 1) by translation (3, 2) is
- d) The area of the opposite figure = ($\pi = 3.14$)

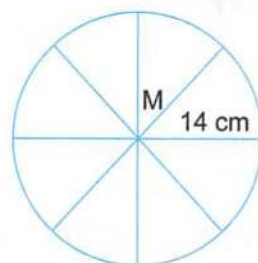


3 In the opposite figure:

5

M is a circle of radius length 14 cm is divided into 8 equal circular sectors. Find:

- a) The surface area of the circle M.
- b) The area of one circular sector. ($\pi \approx \frac{22}{7}$)



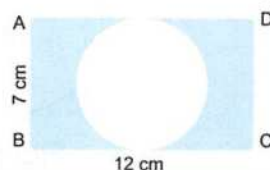
4 In the opposite figure:

5

ABCD is a rectangle, its length 12 cm and its width 7 cm.

A circle is drawn to touch the sides \overline{AD} and \overline{BC} .

Calculate the area of the shaded part. (where $\pi \approx \frac{22}{7}$)



- 5 On a coordinate plane, determine the points A (1, 1), B (4, 1), C (4, -1) and D (1, -1) and find the image by translation ($x - 3$, Y) and what's the name of the shape ABCD?

5

25

25

(5)

(5)

(5)

- (5)

...

...

- ...

5

5

- 5

(1)

(1)

2

2

2

Worksheet **26** Till Lesson (4) – Unit (3)

Total mark

25

1 Choose the correct answer:

5

- a) The area of one face of the cube = its total area. $\left(\frac{1}{2} \text{ or } \frac{1}{8} \text{ or } \frac{1}{6} \text{ or } \frac{1}{4}\right)$
- b) If the total area of a cube is 726 cm^2 , then its lateral surface area = cm^2 .
(484 or 121 or 242 or 181.5)
- c) A circle, its radius is 8 cm, then its area = $\pi \text{ cm}^2$. (16 or 64 or 32 or 8)
- d) The sum of edge lengths of a cube is 96 cm, then the lateral area = cm^2 .
(8 or 64 or 256 or 384)

2 Complete each of the following:

5

- a) The image of the point $(-7, -3)$ by translation $(X + 5, Y + 2)$ is
- b) The cuboid whose lateral area = 120 cm^2 and the perimeter of its base is 12 cm then its height = cm.
- c) The surface area of a circle =
- d) The total area of a cube is 150 cm^2 , then the length of its edge =

3 a) A cube of edge length 6 cm, calculate its lateral area.

5

- b) A circle whose diameter length = 42 cm is divided into 6 equal circular sectors.

Find the area of each sector. $\left(\pi \approx \frac{22}{7}\right)$

- 4** Rania used a piece of square cardboard of side length 80 cm and she used cut and paste paper tools to design a cuboid with 40 cm length, 20 cm width and 30 cm height. **Show whether the piece of cardboard is enough to design a cuboid or not.**

5

5 Calculate the area of the opposite figure:

$\left(\pi \approx \frac{22}{7}\right)$



5

March Model Exam 1

Total mark

15

Choose the correct answer:

- 1) The number of lines of symmetry of a square is (1 or 2 or 3 or 4)
- 2) The image of the point $(-3, 4)$ by translation $(0, -4)$ is
 $((-3, 0) \text{ or } (-7, 4) \text{ or } (-3, 8) \text{ or } (-1, 4))$
- 3) The equation $3x^3 + 5 = 2$ is of the degree. (first or second or third or fourth)
- 4) The height of a cuboid whose lateral area is 120 cm^2 and the dimensions of its base are 4 cm and 6 cm = cm. (3 or 3.6 or 6.3 or 6)
- 5) $(-1)^{103} + (-1)^{104} = \dots\dots\dots$ (1 or -1 or Zero or 2)
- 6) The circle whose diameter length is 14 cm, its area = cm^2 .
 $(44 \text{ or } 154 \text{ or } 145 \text{ or } 77)$
- 7) $36 \times 65 + 15 \times (-36) = 36 (65 \dots\dots\dots 15)$ (+ or - or \times or \div)
- 8) The ratio between the total area and lateral area of a cube is
 $(1 : 4 \text{ or } 2 : 3 \text{ or } 3 : 2 \text{ or } 4 : 1)$
- 9) represents an inequality. ($x > 4 - 7$ or $x + 3 = 2$ or $3x = 21$ or $x + 5$)
- 10) $2^5 \times 2^2 = \dots\dots\dots$ (2^7 or 2^4 or 2^3 or 1)
- 11) If $x = |-2|$, $y = -3$, then $xy = \dots\dots\dots$ (-5 or 6 or -6 or 5)
- 12) is the multiplicative identity (neutral) in \mathbb{Z} . (2 or 1 or Zero or -1)
- 13) A cube of a lateral area = 100 cm^2 , the length of edge length = cm.
 $(5 \text{ or } 25 \text{ or } 50 \text{ or } 4)$
- 14) $\frac{1}{5^3} \times 5^3 \dots\dots\dots 1$ ($>$ or $<$ or $=$ or \geq)
- 15) A circle, its circumference is 88 cm, then its area = cm^2 . ($\pi \approx \frac{22}{7}$)
 $(7 \text{ or } 196 \text{ or } 616 \text{ or } 308)$

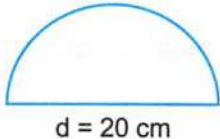
March Model Exam 2

Total mark

25

5

1 Complete each of the following:

- a) The image of the point (..... ,) by translation (3 , 5) is (1 , 3).
- b) Area of the circle =
- c) The area of the opposite figure =  ($\pi \simeq 3.14$)
- d) $54 \times 117 - 54 \times 17 = \dots \times (\dots)$ (Use the distributive property.)
- e) The perimeter of one face of a cube is 28 cm, then its lateral area = cm^2 .

2 Choose the correct answer:

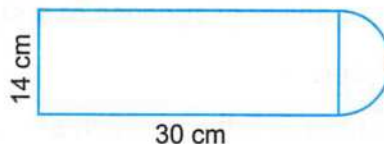
- a) The additive inverse of $(-3)^2$ is (9 or 3 or -3 or -9)
- b) $27 \div (-3)^2 = \dots$ (-9 or 24 or 3 or -3)
- c) The lateral area of a cube = the area of one face \times (4 or 6 or 8 or 2)
- d) $2^6 \times 2^4 = \dots$ (2^2 or 2^{12} or 2^{10} or 2^{24})
- e) The total surface area of a cube whose sum of its edge length is 36 cm is cm^2 .
(36 or 108 or 54 or 27)

3 On the coordinate plane **locate** the points A (2 , 3), B (4 , 3) and C (4 , 7), then **find**:

- a) The length of \overline{AB} and \overline{BC} .
- b) The image of a triangle ABC by translation $(-2 , -4)$.

4 a) Calculate the area of the opposite figure:

- b) Find the value of $\frac{2^5 \times (-2)^3}{2^4 \times (-2)}$

5 A cuboid; its length is 8 cm, its width is 6 cm and its height is 10 cm, **find**:

- a) The lateral area. b) The total area.

Lesson4

Multiplying and dividing integers

Properties of multiplication in Z :

(1) Closure property

The set Z is closed under multiplication.

The product of any two integers is an integer.

(2) Commutative property

If a and b are two integers ,then: $a \times b = b \times a$

(3) Associative property

If a , b and c are three integers , then :

$$a \times b \times c = (a \times b) \times c = a \times (b \times c)$$

(4) The existence of the multiplication identity element in Z

For any integer a ,we have: $1 \times a = a \times 1 = a$

The number " 1 " is the multiplicative identity (neutral)
element in Z

(4) Multiplication is distributed over addition and subtraction in Z

If a , b and c are three integers , then :

$$a \times (b + c) = a \times b + a \times c \text{ and } (b + c) \times a = b \times a + c \times a$$

$$a \times (b - c) = a \times b - a \times c \text{ and } (b - c) \times a = b \times a - c \times a$$

(1) Division is not always possible in \mathbb{Z} or \mathbb{Z} is not closed under Division

(2) Division operation in \mathbb{Z} is not commutative.

(3) Division operation in \mathbb{Z} is not associative.

(1) State whether the product is positive ,negative or 0 :

a) 8×5

b) $16 \times (-37)$

c) $(-3) \times (-9)$

d) -6×7

e) $0 \times (-5)$

(2) State whether the quotient is positive ,negative or 0

a) $(-15) \div (-5)$

b) $24 \div (-3)$

c) $-36 \div 9$

d) $0 \div 8$

(3) Multiply :

a) 3×5

b) $1 \times (-7)$

c) -6×2

d) $0 \times (-10)$

e) $-9 (7)$

f) $|-2| \times (-9)$

g) $(-4) \times (-4)$

h) $9 \times (-1)$

i) $(-5) (-8)$

j) $|-3| \times |-5|$

(4) Divide:

a) $8 \div 2$

b) $(-54) \div (-9)$

c) $49 \div (-7)$

d) $\frac{-86}{-12}$

e) $|-45| \div |-5|$

f) $20 \div (-2)$

g) $(-36) \div (-4)$

(5) Write the property of multiplication in the set Z in each of the following:

a) $-12 \times 1 = -12$ (.....)

b) $-5 \times (9 \times 7) = (-5 \times 9) \times 7$ (.....)

c) $5 \times (-2) = (-2) \times 5$ (.....)

d) $(-2 \times 6) + (-2 \times 9) = -2 \times (6 + 9)$ (.....)

5) Find the value of (n) in each of the following:

a) $-16 \times n = -16$

b) $-7 \times n = 0$

c) $-8 \times 4 = n \times -8$

(6) Complete:

a) The additive neutral element in Z is, while the multiplicative neutral element in Z IS

b) The sum of two negative integers is ainteger, while the product of two negative integers is ainteger

c) The quotient of two integers having different signs when the division operation is possible in \mathbb{Z} is a Integer.

(7) Use the properties of multiplication of integers to find:

a) $147 \times 69 - 47 \times 69$

b) $3 \times (-2) + 3 \times 5$

c) $(-5) \times (-6) + 2 \times (-6)$

d) $23 \times (-121) + 23 \times 21$

(8) Use the distributive property to find:

a) 26×101

b) 64×99

(9) Find the result of each of the following:

a) $(-5) \times (3 + 7)$

b) $12 \times (5 - 9)$

.....

(10) Evaluate each expression when $c = 6$:

a) $2c$

b) $|-5| \times c$

Lesson5

Repeated multiplication

(1) Complete:

a) $7 \times 7 \times 7 = \dots$

b) $6 \times 6 \times 6 \times 6 \dots$

c) Ten to twelfth power =

d) Five squared =

e) Two to the seventh power = 2^{\dots}

f) Four cubed = \dots

(2) Find the value of each of the following:

a) 2^3

b) 10^4

c) $(-6)^3$

d) $(-8)^0$

e) 3^2

f) $(-7)^2$

g) $-(9)^2$

h) $(-1)^{50}$

i) $(-2)^3$

j) 5^0

(3) Find the value of each of the following:

a) $2^2 \times 2^3$

d) $-(2)^4 \times 2^2$

b) $(-5)^3 \times 5^2$

e) $x \times x^3 \times x^5 \times x^7$

c) $3^2 \times 3^2$

f) $(10)^3 \times (-10)^4$

(4) Find the value of each of the following:

a) $2^7 \div 2^5$

b) $3^4 \div 3^3$

c) $(-6)^5 \div (-6)^3$

d) $5^6 \div 5^6$

e) $(-4)^5 \div (-4)^2$

(5) Find the value of each of the following:

a) $2^3 \times 3^2$

b) $(-1)^4 \times (-3)^2$

c) $-(4)^2 \times (-2)^3$

(6) Find the value of each of the following:

a) $\frac{5^3 \times 5^2}{5^4}$

e) $\frac{2^5 \times 2^3}{2^6}$

b) $\frac{7^6}{7 \times 7^3}$

f) $\frac{2^5 \times 2^8}{2 \times 2^9}$

c) $\frac{(-5)^5 \times (-5)^4}{(-5)^6}$

g) $\frac{(-4)^8}{(-4)^2 \times (-4)^5}$

d) $\frac{(-9)^4 \times (-9)^5}{(-9)^6 \times (-9)^3}$

h) $\frac{(-5)^{10} \times (-5)^8}{-5 \times (-5)^5 \times (-5)^{11}}$

(7) Simplify each of the following to its simplest form:

a) $\frac{a^6 \times a^3}{a^5}$ Where $a \neq 0$

b) $\frac{x^8}{x^5 \times x^3}$ Where $x \neq 0$

c) $\frac{a^{12}}{a^9 \times a^2}$ Where $a \neq 0$

(8) Simplify each of the following to its simplest form:

a) $\frac{5^4 \times 3^3}{3^2 \times 5^2}$

b) $\frac{(-4)^4 \times (-3)^2}{4^2 \times (-3)}$

c) $\frac{(-2)^5 \times 3^7}{3^3 \times (-2)^3}$

(9) Put <, > or = :

a) $2^5 \dots 5^2$

d) $(-4)^5 \dots (-4)^2$

b) $(-3)^3 \dots 2^3$

e) $(-5)^3 \dots (-1)^0$

(10) Choose the correct answer:

- a) $(-5)^2 \dots\dots\dots \mathbf{N}$ (\in *or* \notin *or* \subset *or* $\not\subset$)
- b) $(-3)^5 \dots\dots\dots \mathbf{N}$ (\in *or* \notin *or* \subset *or* $\not\subset$)
- c) $(-11)^0 \dots\dots\dots \mathbf{N}$ (\in *or* \notin *or* \subset *or* $\not\subset$)
- d) The additive inverse of $(-8)^0$ is $\dots\dots\dots$ (8 *or* -8 *or* 1 *or* -1)
- e) The additive inverse of $(-1)^3$ is $\dots\dots\dots$ (1 *or* -1 *or* 3 *or* -3)
- f) The additive inverse of $(-2)^3$ is $\dots\dots\dots$ (8 *or* -8 *or* 2 *or* -2)
- g) $x^{8^2} = \dots\dots\dots$ (x^{16} *or* x^4 *or* x^{10} *or* x^{82})
- h) $(-1)^3 + 5$ (5^2 *or* 20 *or* 15 *or* 30)
- i) $\frac{7^5}{7^4} + 1 = \dots\dots\dots$ (7 *or* 1 *or* 8 *or* 7^2)
- j) $2^8 \div 2^4 = \dots\dots\dots$ (2^{12} *or* 2^2 *or* 2×2^3 *or* 8)

lesson1

The equation and inequality of first degree

1) Determine which of the following represents an equation or an inequality and give reasons:

a) $2x + 1 = 5$

b) $x = 7 + 2$

b) $2y + 3 \leq 5$

d) $y^2 + 1 = 5$

e) $5x \geq 30$

f) $2q > 9$

2) Determine the degree of each of the following:

a) $4b - 3 = 5$

b) $3x^3 + x + 4 = 0$

c) $4y + 3z^2 > 2$

d) $5d + 2 > 7$

e) $3w^4 - 5 \leq 7$

f) $3y^2 + 2y = 3$

3) Find the solution set of each of the following:

a) $3x - 4 = 8$ if the substitution set is $\{ 3, 5, 6 \}$

if $x=3$

if $x=5$

if $x=6$

b) $-2 + 3y = 7$ if the substitution set is $\{ 0, 1, 2 \}$

.....
.....
.....

c) $2z - 3 > 1$ if the substitution set is $\{ 7 , 6 , 5 , 4 \}$

.....
.....
.....
.....

d) $3q + 4 \leq -2$ if the substitution set is $\{ -1 , 0 , 1 , 2 , 3 \}$

.....
.....
.....
.....

4) **Considering the set of substitution is $M = \{ -1, -2 , 0 , 2 \}$ find the solution set of each of the following:**

a) $2x + 1 = 5$

b) $x - 3 < -1$

5) **Choose the correct answer:**

a) which of the following numbers represents a solution to the equation $x + 3 = 7$ where the substitution is $\{ 0 , 1 , 2 , 3 , 4 , 5 \}$?

[a] 6

[b] 4

[c] 3

[d] 2

b) if the substitution set is $\{ 3 , 5 , 7 , 9 \}$, which of the following numbers is a solution to the $3x + 6 = x + 20$?

[a] 3

[b] 5

[c] 7

[d] 9

c) the number -5 is a solution to the equation.....where the substitution set is z

[a] $x - 3 = 2$

[b] $2x - 1 = 9$

[c] $-2x + 3 = 13$

[d] $x + 3 = 2x + 12$

d) if the substitution set is $\{ 2 , -1 , 3 , 4 \}$, then the solution set of the equation : $2x + 3 = 3$ is

[a] $\{ 0 \}$

[b] $\{ -1 \}$

[c] $\{ -3 \}$

[d] \varnothing

The circle

1) Find the area of each of the following circles for the given radius.

Round your answer to the nearest hundredth .where $\pi \cong 3.14$

a) $R = 8$ cm.

b) $r = 3.6$ m

2) Find the area of each of the following circles for the given diameter.

Round your answer to the nearest hundredth .where $\pi \cong 3.14$

a) $D = 16$ cm.

b) $d = 21$ m.

3) Find the area of a circle with a radius of length 21 cm. where $\pi \cong \frac{22}{7}$

4)) Find the area of a circle with a diameter of length = 17.5 cm

Where $\pi \cong 3.14$ or $\frac{22}{7}$

4) Complete:

- 1) The area of a circle =
- 2) The radius of a circle is 14 cm. ,then its circumference = And its Area = cm^2 Where $\pi \cong \frac{22}{7}$
- 2) If the area of a circle = $25 \pi \text{cm}^2$, then its radius = cm.
- 3) If the circumference = 30π mm. then the area of the circle =

4) Choose the correct answer:

- 1) The area of the circle =
- a) πr b) πr^2 c) $2\pi r$ d) $2 \pi r^2$
- 2) A circle , its diameter length is 8 cm. ,its area = cm^2 .
- a) $8 \pi r$ b) 64π c) $16 \pi^2$ d) 16π
- 3) The circumference of a circle is 44 cm. , then the length of its diameter Is cm Where $\pi \cong \frac{22}{7}$
- a) 14 b) 22 c) 44 d) 154
- 4) The area of a circle with a diameter of length 7 cm. equals cm^2
- a) 49π b) $49 \pi^2$ c) 14π d) 12.25π
- 5) A circle its area is πcm^2 . ,then its circumference is
- a) π b) $\frac{1}{2} \pi$ c) 2π d) 4π
- 6) A circle its circumference is $14 \pi \text{m}$. Calculate its area.
- 7)) A circle its circumference is $2 \pi \text{cm}$. Calculate its area
- 8) The area of a circle is 154cm^2 .calculate its circumference. ($\pi = 3.14$)
-

Lesson4

The lateral area and the total area

1) Complete :

- a) Lateral area of a cuboid = x its height
- b) A cube with edge length 6cm, Then the area of one of its faces is.....
- c) If the area of one face of a cube is 25 cm^2 then its total surface area =
- d) total area of a cuboid =

2) Choose the correct answer from those given ones:

- a) A cube with edge 10cm then its total area:
(1000 cm^2 , 240 cm^3 , 600 cm^2)
- b) A cube of edges of 1 cm long. Then its total area =.....
(1 , 6 , 12)
- c) Lateral area of a cuboid is 100 cm^2 , And its dimensions base are 6cm, 4cm, then its height is (10 cm , 6cm , 5cm)

3) A cube with edge 6cm long, Find its volume and its total surface area.

4) A cuboid has a square base with side 8 cm long. If the height of the cuboid is 10 cm, find its volume and its lateral area.

5) Mark (✓) for the correct statement and (x) for the incorrect one:

- a) Lateral area of a cuboid = length x width x height ()
- b) A cuboid with length 6 cm, width 4 cm and height 8 cm.
then its lateral area = 160 cm^2 ()
- c) The lateral area of a cube with edge 5 cm = 150 cm^2 . ()
- d) Lateral area of a cube = area of its faces x 6 ()

**6) A. cube-shaped container with inner edge 5.4 dm long
calculate:**

- a) The area of one of each faces
- b) The lateral area of the container.
- c) The capacity of the container in litres

7) The sum of the lengths of the edge of a cube is 60 cm. Find its volume and its lateral area.

8) A cube with edge 6 cm long. Calculate its volume, and its total surface area.

10) Mark (✓) for the correct statement and (x) for the incorrect one:

- a) The lateral area of a cube = the area of one face $\times 6$ ()
- b) The lateral area of a cube with edge 1.8 cm = 12.96 m³ ()
- c) Lateral area of a cuboid = its base area \times its height ()
- d) A cube with edge 3 cm long, then its total surface area is 45cm² ()

11) A cube with edge 10 cm . Find:

- a) The area of one of its face
- b) Its total surface area

12) A cuboid with square base of side length 8 cm and height 10 cm . Find its lateral area and its total surface area.

13) A box in the shape of a cuboid with length 5 cm , width 4 cm and height 6 cm . Find:

- a) Its lateral area
- b) Its total area
- c) Its volume

14) The edge of a metallic cube is 24 cm long. it is melted and reshaped as a cuboid of base dimensions 32 cm and 9cm. Find the height of the cuboid.

15) The total surface area of a cube is 150 cm^2 . Find the area of one of its faces then find its volume.

16) The dimensions of the base of a cuboid are 10 cm and 6 cm and its height is 1.6 decimeter, find its volume and its lateral area.

SHEET (4)

Multiplying and Dividing integers

The product of two positive integers = positive integer.

The product of two negative integers = positive integer

The product of two integers having different signs = negative integer

$$+ \times + = +$$

$$- \times - = +$$

$$- \times + = -$$

$$+ \times - = -$$

[1] Multiply:

(1) $3 \times 5 = \dots\dots\dots$

(3) $(-6) \times 2 = \dots\dots\dots$

(5) $(-9) \times 7 = \dots\dots\dots$

(7) $(-131) \times (-3) = \dots\dots\dots$

(9) $-(-3) \times (-2) = \dots\dots\dots$

(11) $|-10| \times |-2| = \dots\dots\dots$

(2) $(-4) \times (-4) = \dots\dots\dots$

(4) $0 \times (-10) = \dots\dots\dots$

(6) $8 \times (-1) = \dots\dots\dots$

(8) $200 \times (-3) = \dots\dots\dots$

(10) $|-3| \times |-5| = \dots\dots\dots$

(12) $-|-1| \times |-4| = \dots\dots\dots$

[2] Divide:

(1) $8 \div 2 = \dots\dots\dots$

(3) $(-49) \div 7 = \dots\dots\dots$

(5) $0 \div 10 = \dots\dots\dots$

(7) $(-100) \div 25 = \dots\dots\dots$

(9) $(-18) \div 6 = \dots\dots\dots$

(11) $18 \div (-2) = \dots\dots\dots$

(2) $(-64) \div 7 = \dots\dots\dots$

(4) $(-36) \div (-4) = \dots\dots\dots$

(6) $77 \div (-11) = \dots\dots\dots$

(8) $(-18) \div (-3) = \dots\dots\dots$

(10) $|-45| \div |-5| = \dots\dots\dots$

(12) $-|-42| \div 6 = \dots\dots\dots$

[3] Complete:

(1) $(-8) \times 4 = \dots\dots\dots \times (-8)$

(2) $(-16) \times \dots\dots\dots = (-16)$

(3) $\times (9 + 5) = (-4 \times 9) + (-4 \times 5)$

(4) $(-7) \times \text{.....} = 0$

(5) $(-9) \div 3 = \text{.....}$

(6) $8 \times \text{.....} = (-48)$

(7) $\times 9 = (-45)$

(8) $(-18) \div \text{.....} = (-9)$

(9) If $a \times b = a$, and $a \neq 0$, then $b = \text{.....}$

(10) If $a \div b = 1$, then $b = \text{.....}$

(11) The additive neutral element in Z is, while the multiplicative neutral element in Z is

(12) The quotient of two integers having different signs in Z is a integer.

(13) The sum of two negative integers is a integer, while the product of two negative integers is a integer.

[4] Use the properties of multiplication of integers to find:

(1) $2 \times 23 \times 5$

=

=

=

=

(2) $4 \times (-5) \times 3 \times (-2)$

=

=

=

=

(3) $50 \times (-56) \times 2$

=

=

=

=

(4) $8 \times 58 \times (-125)$

=

=

=

=

[5] Use the distributive property to find:

(1) $3 \times (-2) + 3 \times 5$

=

=

=

(2) $(-5) \times (-6) + 2 \times (-6)$

=

=

=

(3) $112 \times 17 + 112 \times (-17)$

=

=

=

(4) $(-35) \times (-42) + (-35) \times 52$

=

=

=

(5) 26×101

=

=

=

=

(6) 64×99

=

=

=

=

[6] If $x = 2$, $y = 1$ and $z = 5$ find the value of:

(1) $3x - 2y + z$

=

=

=

(2) $(10x \div z) - 3y$

=

=

=

SHEET (5)

Repeated Multiplication

$$2 + 2 + 2 = \dots \times \dots$$

[1] Find the volume of a cube whose edge length is 2 cm.

$$2 \times 2 \times 2 = 2^{\dots} \text{ is read as } \dots \text{ or } \dots$$

[2] Find the area of a square whose side length is 2 cm.

$$2 \times 2 = 2^{\dots} \text{ is read as } \dots \text{ or } \dots$$

$$2 = 2^{\dots}, \quad 2^0 = \dots$$

Any number (except zero) of power zero equals to one

$$E = \{ 0, 2, 4, 6, 8, 10, \dots \}$$

$$O = \{ 1, 3, 5, 7, 9, 11, \dots \}$$

☞ $(-3)^2 = -3 \times -3 = \dots$

☞ $(-3)^4 = -3 \times -3 \times -3 \times -3 = \dots$

☞ $(-3)^3 = -3 \times -3 \times -3 = \dots$

☞ $(-3)^5 = -3 \times -3 \times -3 \times -3 \times -3 = \dots$

☞ $2 \times 2 \times 2 = 2^{\dots}$

☞ $2^3 \times 2^5 = 2^{3+5} = 2^{\dots}$

☞ $5^6 \times 5^3 = 5^{6+3} = 5^{\dots}$

☞ $2^5 \div 2^4 = 2^{5-4} = 2^{\dots}$

☞ $2^6 \div 2^4 = 2^{6-4} = 2^{\dots}$

[3] Find the value of each of the following:

(1) $2^3 = \dots\dots\dots$

(2) $5^3 = \dots\dots\dots$

(3) $(-3)^3 = \dots\dots\dots$

(4) $(-6)^3 = \dots\dots\dots$

(5) $(-8)^0 = \dots\dots\dots$

(6) $-(9)^3 = \dots\dots\dots$

(7) $(-1)^{50} = \dots\dots\dots$

(8) $(-1)^{51} = \dots\dots\dots$

(9) $10^4 = \dots\dots\dots$

(10) $-2^2 = \dots\dots\dots$

(11) $10 = 10^1$

(12) $100 = 10 \times 10 = 10^{\dots\dots\dots}$

(13) $1000 = 10 \times 10 \times 10 = 10^{\dots\dots\dots}$

(14) $10000 = 10 \times 10 \times 10 \times 10 = 10^{\dots\dots\dots}$

(15) $2^3 \times 2^2 = \dots\dots\dots$

(16) $(10)^3 \times (-10)^4 = \dots\dots\dots$

(17) $(-5)^3 \times 5^2 = \dots\dots\dots$

(18) $-(2)^4 \times 2^2 = \dots\dots\dots$

(19) $7 \times 7^3 \times 7^2 = \dots\dots\dots$

(20) $2^7 \div 2^5 = \dots\dots\dots$

(21) $3^4 \div 3^3 = \dots\dots\dots$

(22) $(-6)^5 \div (-6)^3 = \dots\dots\dots$

(23) $(-5)^5 \div 5^3 = \dots\dots\dots$

(24) $a^6 \div a^3 = \dots\dots\dots$

[4] Find the value of each of the following:

(1) $2^3 \times 3^2 = \dots\dots\dots$

(2) $2^3 + 3^2 = \dots\dots\dots$

(3) $2^3 + 2^2 = \dots\dots\dots$

(4) $(-5)^2 \times 2^2 = \dots\dots\dots$

(5) $(-4)^3 \times (-1)^5 = \dots\dots\dots$

(6) $(-5)^3 \times (-1)^{17} = \dots\dots\dots$

(7) $(-1)^{30} \times (-1)^{19} = \dots\dots\dots$

(8) $3^2 + 3^2 + 3^2 = \dots\dots\dots$

[5] Find the value of each of the following:

(1) $\frac{5 \times 5^3}{5^4}$ =

(2) $\frac{7^4 \times 7^5}{7^7}$ =

(3) $\frac{(-3)^3 \times (-3)^4}{(-3)^5}$ =

(4) $\frac{3^2 \times (-3)^5}{3^4}$ =

(5) $\frac{(-3)^6}{(-3)^3} + \frac{(-4)^5}{(-4)^3}$ =

(6) $\frac{a^6 \times a^3}{a^5}$ =

(7) $\frac{x^8}{x^5 \times x^3}$ =

(8) $\frac{5^4 \times 3^3}{3^2 \times 5^2}$ =

(9) $\frac{(-2)^5 \times 3^7}{3^3 \times (-2)^3}$ =

(10) $\frac{x^5 \times y^6}{y^3 \times x^2}$ =

[6] Arrange in an ascending order:

(1) $(-2)^5, (-3)^4, (-4)^0, (-1)^{15}, 3^2$
.....
.....

(2) $2^3, 3^2, (-2)^3, (100)^0, (-1)^5$
.....
.....

[7] Arrange in a descending order:

(1) $(-2)^3, (-2)^2, (-2)^0, (-1)^5$

.....
.....

(2) $10^2, (-1)^5, 1000, (1000)^0$

.....
.....



[8] If $a = 2$ and $b = -3$, find the value of each of the following:

(1) $3a^2b =$

(2) $2a + 3b =$



[8] Use the distributive property to find the value of:

(1) $(17)^2 + 17 \times 83$
=
=
=
=

(2) $33 \times 23 - (23)^2$
=
=
=
=

(3) $(27)^2 + 27 \times (-17)$
=
=
=
=

SHEET (7)

Equations and inequalities

[1] Find the solution set of each of the following equations:

(1) $x + 7 = 10$ if the substitution set is $\{1, 3, 5\}$

.....
.....
.....
.....

(2) $x + 5 = 12$ if the substitution set is $\{5, 7, 8\}$

.....
.....
.....
.....

(3) $2x + 1 = 5$ if the substitution set is $\{-1, 0, 2\}$

.....
.....
.....
.....

(4) $4x - 3 = 9$ if the substitution set is $\{2, 3, 4\}$

.....
.....
.....
.....

[2] Find the solution set of each of the following inequalities:

(1) $x + 3 < 5$ if the substitution set is $\{0, 1, 2\}$

.....
.....
.....
.....

(2) $x - 4 > 1$ if the substitution set is $\{ 5, 6, 7 \}$

.....
.....
.....
.....

(3) $2x - 3 > 1$ if the substitution set is $\{ 0, 1, 2, 3 \}$

.....
.....
.....
.....

(4) $3x - 1 > -2$ if the substitution set is $\{ -2, -1, 0, 1, 2 \}$

.....
.....
.....
.....
.....

(5) $-x + 1 < 4$ if the substitution set is $\{ -3, -2, 0, 2, 3 \}$

.....
.....
.....
.....
.....
.....

[3] Find the solution set of each of the following equations in \mathbb{N} :

(1) $x + 3 = 7$

.....
.....
.....

(2) $y + 8 = 19$

.....
.....
.....

(3) $x - 9 = -5$

.....
.....
.....

(4) $8x = 32$

.....
.....
.....

(5) $3y = 27$

.....
.....
.....

(6) $4x = |-8|$

.....
.....
.....

(7) $\frac{n}{3} = 5$

.....
.....
.....

(8) $\frac{x}{10} = 2$

.....
.....
.....



[4] Find the solution set of each of the following equations in \mathbb{Z} :

(1) $x - 3 = -7$

.....
.....
.....

(2) $x + 8 = 0$

.....
.....
.....

(3) $-4 + x = -8$

.....
.....
.....

(4) $m - (-3) = 1$

.....
.....
.....

(5) $5y = -35$

.....
.....
.....

(6) $-4x = -24$

.....
.....
.....

(7) $2 - x = 9$

.....
.....
.....

(8) $7 - m = 12$

.....
.....
.....



[5] Find the solution set of each of the following equations:

(1) $3x - 2 = 7, x \in \mathbb{Z}$

.....
.....
.....
.....
.....

(2) $4x + 1 = 17, x \in \mathbb{N}$

.....
.....
.....
.....
.....

(3) $5x + 2 = -8, x \in \mathbb{N}$

.....
.....
.....
.....
.....

(4) $2y + 16 = 2^4, y \in \mathbb{N}$

.....
.....
.....
.....
.....

(5) $\frac{y}{5} + 2 = -4, y \in \mathbb{N}$

.....
.....
.....
.....
.....

(6) $\frac{x}{2} - 4 = 7, x \in \mathbb{N}$

.....
.....
.....
.....
.....

[6] Complete:

(1) If $3x - 3 = 12$, then $x = \dots\dots\dots$

(2) If $3y = 6$, then $5y = \dots\dots\dots$

(3) If $4x = 24$, then $\frac{x}{3} = \dots\dots\dots$

(4) If $x + 9 = 11$, then $7x = \dots\dots\dots$

(5) If $(x+1)$ is the additive inverse of (-2) , then $x = \dots\dots\dots$

(6) The natural number just next to the number $x + 1$ is $\dots\dots\dots$

(7) The preceding integer number to the number $x - 1$ is $\dots\dots\dots$

(8) Two successive odd numbers, the smaller one is x , then the greater is $\dots\dots\dots$

(9) Two successive even numbers, the greater is $x + 3$, then the smaller is

(10) The age of Ahmed now $3x$ years, then his age 3 years ago was

(11) The age of Ali now x years, then his age after 3 years is

[7] Find in \mathbb{N} the solution set:

(1) $x - 3 < 1$

.....
.....
.....

(2) $x + 2 > 5$

.....
.....
.....

(3) $x + 4 > 1$

.....
.....
.....

(4) $x - 4 \leq -1$

.....
.....
.....

(5) $m - 5 \geq |-7|$

.....
.....
.....

(6) $19 < a + 14$

.....
.....
.....

(7) $-1 \geq x + 3$

.....
.....
.....

(8) $4k \geq -16$

.....
.....
.....

(9) $-2y < -14$

.....
.....
.....

(10) $-3x \geq -15$

.....
.....
.....

[8] Find the solution set of each of the following inequalities:

(1) $2x + 1 < 7, x \in N$

.....
.....
.....
.....
.....

(2) $2x - 3 < 5, x \in Z$

.....
.....
.....
.....
.....

(3) $4x + 2 \geq -10, x \in Z$

.....
.....
.....
.....
.....

(4) $4x + 1 < 13, x \in Z$

.....
.....
.....
.....
.....

(5) $9 - 6x < 15, x \in Z$

.....
.....
.....
.....
.....

(6) $1 + 2x \leq -3, x \in N$

.....
.....
.....
.....
.....

(7) $1 - 8x < 33, x \in Z$

.....
.....
.....
.....
.....

(8) $1 - 3x > 7, x \in N$

.....
.....
.....
.....
.....

[6] Complete:

(1) If $x > y$, then $x + z$ $y + z$

(2) If $x > y$, then $x - z$ $y - z$

(3) If $x > y$ and z positive, then xz yz

(4) If $x > y$ and z negative, then xz yz

(5) The S.S. of $2x - 3 < 5$ in \mathbb{Z} is

(6) The S.S. of $1 - x > 4$ in \mathbb{N} is

(7) The S.S. of $-2 < x \leq 0$ in \mathbb{N} is

[7] Choose:

- (1) The number that satisfies the inequality $x > -2$ is
(a) -1 (b) -4 (c) -3 (d) -2
- (2) The S.S. of the inequality $4 - x > 3$ in \mathbb{Z}^+ is
(a) $\{0, -1, -2, \dots\}$ (b) $\{0, 1, 2, \dots\}$ (c) $\{0\}$ (d) \emptyset
- (3) The S.S. of the inequality $-2x < 0$ in \mathbb{Z} is
(a) \emptyset (b) \mathbb{N} (c) \mathbb{Z}^- (d) \mathbb{Z}^+
- (4) If $x \in \mathbb{N}$, then the S.S. of inequality $\sim x > 3$ is
(a) $\{4, 5, \dots\}$ (b) $\{-4, -5, \dots\}$ (c) $\{-3\}$ (d) \emptyset
- (5) The S.S. of the inequality $\sim 1 \leq x < 1$ in \mathbb{Z} is
(a) $\{-1, 0\}$ (b) $\{0, 1\}$ (c) $\{0\}$ (d) $\{1\}$
- (6) If $x > 5$, then $\sim x$ -5
(a) $>$ (b) \geq (c) \leq (d) $<$

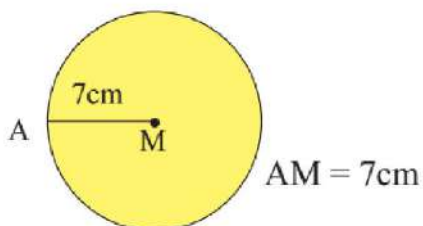
SHEET (10)

Area of the circle

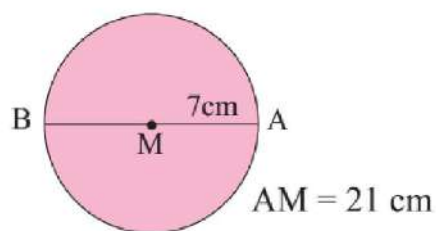
The surface area of the circle $= \pi r^2$

(1) Find the area of each of the following where $\pi \approx \frac{22}{7}$

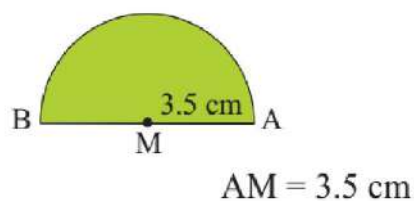
(a)



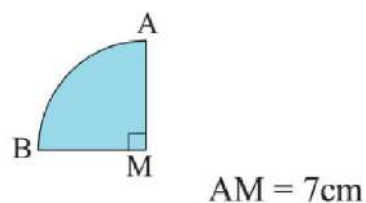
(b)



(c)



(d)



< (2) A circle its diameter is 12 cm, calculate its surface area where
 $(\pi \approx \frac{22}{7} \text{ or } 3.14)$

(4) A circle its circumference is 62.8 cm. Calculate its surface area.

$$(\pi \approx \frac{22}{7})$$

Find the area of the following circles where $\pi \approx 3.14$

a $r = 8$ cm. area =

b $d = 16$ cm. area =

c $r = 5$ km. area =

d $d = 21$ m. area =

e $r = 6.3$ mm. area =

f $d = 28$ km. area =

Choose the correct answer :

a  The area of the circle =

[a] πr

[b] πr^2

[c] $2 \pi r$

[d] $2 \pi r^2$

b A circle , its diameter length is 8 cm. , its area = cm^2

[a] 8π

[b] 64π

[c] $16 \pi^2$

[d] 16π

c The circumference of a circle is 44 cm. , then the length of its diameter is cm. ($\pi = \frac{22}{7}$)

[a] 14

[b] 22

[c] 44

[d] 154

d The area of the circle with diameter of length 7 cm. equals cm^2

[a] 49π

[b] $49 \pi^2$

[c] 14π

[d] 12.25π

A circle its circumference is 14π m. calculate its area.

.....

.....

.....

.....

A circle its circumference is 62.8 cm. calculate its area where $\pi = 3.14$

.....

.....

.....

.....

A circle its circumference is 57 cm. calculate its area. ($\pi = \frac{22}{7}$)

.....

.....

.....

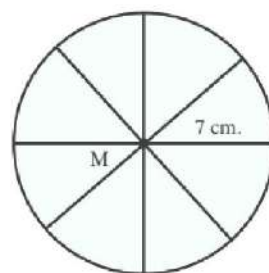
.....

A circle of radius length 7 cm
is divided into 8 equal circular sectors

First : Find the area of one circular sector

Second : the measure of the central angle of the sector.

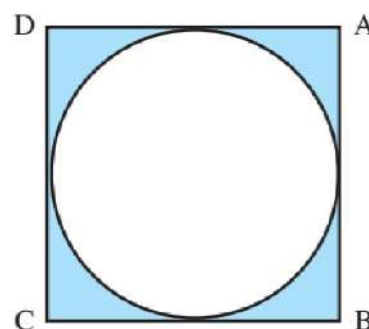
(consider $\pi = \frac{22}{7}$)



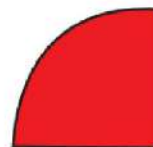
A square of side length 20 cm.

Then the area of the shaded part in cm^2 equals.

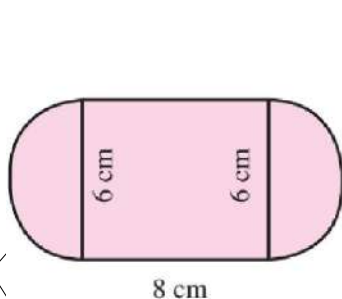
(consider $\pi = 3.14$)



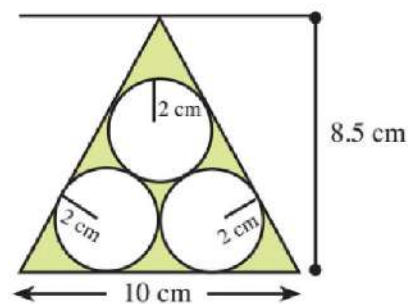
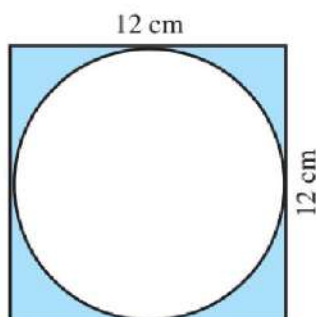
The apposite figure represents the quarter of a circle of radius length 2 cm.
Then its perimeter in cm equals.



Find the area of the shaded part in each of the following figures:



(consider $\pi = 3.14$)



(consider $\pi = 3.14$)

SHEET (11)

L.S.A. and T.S.A. for each of cube and cuboid

* The lateral area of the cuboid = Perimeter of the base x height

* The total area of the cuboid = The lateral area + Area of the two bases.

- (1) The perimeter of the base of a cuboid is 24 cm and its height is 10 cm. Find the lateral surface area.
- (2) If the lateral area of a cuboid is 120 cm^2 and the perimeter of its base is 20 cm. Find its height.
- (3) A cuboid its length is 6 cm, its width is 4 cm and its height is 5 cm. find: (a) its lateral area. (b) its total area.
.....
.....
.....
.....
- (4) A cuboid of length 6 cm, width 4 cm and height 10 cm. find its lateral area.
.....
- (5) A cuboid of length 7cm, width 3cm and height 8 cm. find its total area.
.....
.....
.....
- (6) If the lateral area of a cuboid is 120 cm^2 and the dimensions of its base are 4 cm and 6 cm. Find its height.
.....
.....

- (7) A cuboid of a square base with side length 8 cm and its height is 10 cm find: (a) its lateral area. (b) its total area.

.....

.....

.....

.....

- (8) A case in the shape of cuboid its base is a square of side length 6 cm and its height is 10 cm find: (a) its lateral area. (b) its total area.

.....

.....

.....

.....

- (9) A cuboid whose total area is 132 cm^2 and its lateral area is 112 cm^2 Find the area of its base.

.....

.....

- (10) If the lateral area of a cuboid is 60 cm^2 and its base area is 8 cm^2 . Find its total area.

.....

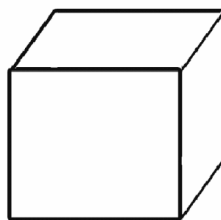
.....

- (11) The lateral area of cuboid = \times

- (12) The total area of cuboid = $+$

The Cube has :

12 Edges
8 Vertices
6 Faces



Lateral Surface Area of the cube = Area of one face \times 4

L . S . A. of the cube = Area of one face \times 4

L . S . A. of the cube = edge \times edge \times 4

Area of one face = L . S . A. \div 4

Total Surface Area of the cube = Area of one face \times 6

T . S . A. of the cube = Area of one face \times 6

T . S . A. of the cube = edge \times edge \times 6

Area of one face = T . S . A. \div 6

L . S . A. : T . S . A.

Face area \times 4 : Face area \times 6

4 : 6

\div 2

2 : 3

- (1) A cube of edge length 8 cm. Find its lateral area and its total area.

.....
.....

- (2) A cube of edge length 6 cm. Find its lateral area and its total area.

.....
.....

- (3) Find the total area of a cube whose face area is 49 cm^2 .

.....
.....

- (4) If the area of one face of a cube 36 cm^2 . Find its lateral area.

.....
.....

(5) If the lateral area of a cube is 36 cm^2 . Find its total area.

.....
.....

(6) Find the lateral area of a cube whose total area is 48 m^2 .

.....
.....

(7) The sum of the edge lengths of a cube equals 72 cm , then edge length of the cube = cm

(8) If the perimeter of one face of a cube is 12 cm . Find its total area

.....
.....

(9) A cube of total area 150 cm^2 . Find its edge length.

.....
.....

(10) If the lateral area of a cube is 64 cm^2 . Find its volume.

.....
.....

(11) If the volume of a cube is 1000 cm^3 . Find its total area.

.....
.....

(12) If the total area of a cube is 216 cm^2 . Find its lateral area and its volume.

.....
.....
.....

- (13) A cube of edge length 8 cm. Find the ratio between its lateral area and its total area.

.....

.....

.....

.....

A room its length is 5m, its width is 4m, and its height is 3.2m. It is wanted to paint its lateral walls and ceiling. The cost price of one square meter is LE 8. Calculate the required cost. Knowing that the room has 2 windows and a door their areas are 8m^2 .

.....

.....

.....

.....

Complete:

- (1) The ratio between area of one face of a cube and its latera area is :
- (2) The ratio between area of one face of a cube and its total area is :
- (3) The ratio between the lateral area and the total area of a cube is :
- (4) If the ratio between the edge length of three cubes is $1 : 2 : 3$ then the ratio between their lateral areas is : :

Choose the correct answer:

1	$2 \times (-8) = \dots\dots$ a 16 b -18 c -6 d -16
2	$(-4) \times 9 = \dots\dots$ a 12 b -36 c 36 d 5
3	$(-5) \times (-6) = \dots\dots$ a 11 b -30 c 30 d -11
4	$(-32) \div (-8) = \dots\dots$ a 4 b -4 c 40 d -24
5	$(-18) \div 3 = \dots\dots$ a -9 b -3 c -2 d -6
6	$24 \div (-4) = \dots\dots$ a -2 b -3 c -4 d -6
7	If $X = 7$ and $Y = -6$, then $XY = \dots\dots$ a 42 b -42 c 76 d -76
8	If $X = 8$ and $Y = 9$, then $XY = \dots\dots$ a 72 b -72 c 89 d -89
9	The multiplicative identity of integer numbers is a 0 b 1 c 2 d -1
10	$5^0 = \dots\dots$ a 0 b 1 c -1 d 5
11	$(-6)^0 = \dots\dots$ a 0 b 1 c -1 d -6
12	$3^5 \times 3^2 = \dots\dots$ a 3^7 b 3^3 c 3^{10} d 3^4
13	$\frac{6^2 \times 6^3}{6^5} = \dots\dots$ a 1 b 12 c 6 d 36
14	$2^8 \div 2^7 = \dots\dots$ a 1 b 2 c 4 d 8

15	$3^7 \div 3^5 = \dots\dots$ (a) 1 (b) 9 (c) 27 (d) 81
16	$3^0 + (-3)^0 = \dots\dots$ (a) 0 (b) 1 (c) 2 (d) 6
17	$(-1)^{10} + (-1)^{11} = \dots\dots$ (a) 0 (b) 1 (c) 2 (d) 10
18	$(-2)^4 + (-2)^3 = \dots\dots$ (a) -8 (b) 8 (c) 2 (d) -2
19	$2^4 + 2^4 = \dots\dots$ (a) 2^4 (b) 2^5 (c) 4^4 (d) 2^8
20	The equation $X^3 + 3X = 4$ is of the degree (a) first (b) second (c) third (d) fourth
21	The equation $X^4 - 3X = 4$ is of the degree (a) first (b) second (c) third (d) fourth
22	The equation $X + 3 = 4$ is of the degree (a) first (b) second (c) third (d) fourth
23	The equation $X^2 + 5X = 4$ is of the degree (a) first (b) second (c) third (d) fourth
24	The equation is a mathematical sentence includes relation between two sides. (a) = (b) < (c) > (d) otherwise
25	The area of the circle's surface = (a) πr (b) πr^2 (c) $2 \pi r$ (d) $2 \pi r^2$
26	A surface area of a circle of radius length 3.5 cm = cm^2 . $\left(\pi = \frac{22}{7}\right)$ (a) 38.5 (b) 154 (c) 346.5 (d) 616
27	A surface area of a circle of diameter length 20 cm = cm^2 . $(\pi = 3.14)$ (a) 31.4 (b) 314 (c) 3140 (d) 0.314
28	A circle of radius length 2 cm, its surface area = $\pi \text{ cm}^2$. (a) 4 (b) 9 (c) 16 (d) 25

29	A circle of diameter length 10 cm, its surface area = π cm ² . (a) 25 (b) 9 (c) 16 (d) 100
30	A circle of diameter length 4 cm, its surface area = cm ² . (a) 4π (b) 9π (c) 16π (d) 25π
31	A circle of diameter length 14 cm, its surface area = cm ² . $\left(\pi = \frac{22}{7}\right)$ (a) 38.5 (b) 154 (c) 346.5 (d) 616
32	The cube has faces (a) 6 (b) 8 (c) 10 (d) 12
33	A cube of edge length 5 cm, its total area = cm ² . (a) 24 (b) 36 (c) 64 (d) 150
34	A cube of edge length 4 cm, its lateral area = cm ² . (a) 24 (b) 36 (c) 64 (d) 100
35	If the perimeter of one face of a cube is 8 cm, then its T.S.A. =cm ² . (a) 6 (b) 24 (c) 54 (d) 216
36	If the sum of edges lengths of a cube is 36 cm, then its edge length = cm. (a) 2 (b) 3 (c) 4 (d) 5
37	The cuboid has faces. (a) 6 (b) 8 (c) 10 (d) 12
38	The lateral area of the cuboid = base perimeter \times (a) height (b) width (c) length (d) volume
39	If the base perimeter of a cuboid is 9 cm, and the height is 8 cm, then the lateral surface area = cm ² . (a) 50 (b) 72 (c) 48 (d) 120
40	The lateral area of the cuboid with length 3 cm, width 2 cm, and height 5 cm is cm ² (a) 40 (b) 50 (c) 60 (d) 70



Essay Problems:

1

A cuboid-shaped box with a square base of side length 10 cm and its height is 7 cm. Calculate its lateral area.

.....

2

The circumference of a circle is 88 cm. Calculate its surface area.

.....

.....

3

Find: (1) its lateral surface area. (2) its total surface area.

.....

.....

.....

4

Find the result of: $\frac{(-3)^4 \times (-3)^5}{(-3)^6 \times (-3)}$

.....

5

Find the result of: $\frac{7^4 \times 7^5}{7^7}$

.....

6

A cube of edge length 6 cm, find its lateral area and total area.

.....

.....

7

Use the properties of addition in Z to find: $25 \times 9 + 25 - 25 \times 9$

.....

.....

